

OCTOBER 1948

# ≡ SOIL CONSERVATION ≡

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UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

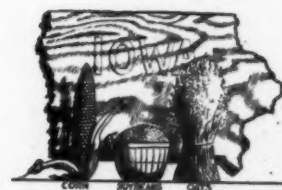
# SOIL CONSERVATION •

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### WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

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**YIELD STUDIES.**—Iowans who farm on the contour get more corn, oats, and soybeans to the acre than those who farm up and down hills, finds G. M. Browning, SCS research, Ames, Iowa. In a 2-year average, contouring increased corn yields 5.7 bushels per acre and soybeans 2.7 bushels. The increase in oats was 5.6 bushels. Studies were conducted in cooperation with farmers in 16 soil conservation districts and on at least 8 major soil types.

**FIGURES.**—Approximately 500,000 acres of cropland are annually ruined by erosion for further immediate practical cultivation, estimates the Soil Conservation Service. This is the equivalent of 10,000 50-acre farms! But there is a lot more to the erosion-damage story; for instance, the fact that 385 million acres of the present cropland are hurt in varying degrees by erosion. Of the present cropland, 300 million acres are suitable for cultivation if protected by the right combination of conservation practices.



**FRONT COVER.**—From the air the farm of Rev. William H. Stauffer is as pleasing as on the ground. As Glenn K. Rule says in his article in this issue, here works a farmer who is "an all around conservationist." The farm is in Tuscarawas County, Ohio, and its story is well worth reading. The plane-riding photographer is Hermann Postlethwaite.

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Everett Bass, a cooperator with the North Fork of Red River Soil Conservation District in Oklahoma, established this fine Bermuda grass waterway which receives terrace runoff water from both sides. He uses the waterway for pasture.

By W. M. NIXON

**B**ERMUDA GRASS is a native of the Bengal region of India. It does not seem to be definitely known when and how it was introduced into the United States, but it was probably in the latter part of the eighteenth century.

Botanists call Bermuda grass *Cynodon dactylon*. But in one place or another it has been known as "wire grass", "reed grass", "dog's tooth grass", "salt grass", "scutch grass", "cane grass", "Bahamas grass", "Yankee grass" (a local name in Virginia, because of its supposed introduction by the northern army during the Civil War), and "devil grass."

Once considered strictly a pest, it has rapidly gained recognition by conservation farmers and Soil Conservation Service technicians as a dependable aid in the battle against soil erosion.

Soil conservation district cooperators throughout Arkansas, Louisiana, east and central Okla-

homa, and east and central Texas are using Bermuda extensively in their coordinated conservation program to tie down eroding soil, reduce runoff, and serve as a base pasture grass. It does all these jobs effectively.

There is practically no soil or water loss under a good sod of Bermuda. At the Red Plains Conservation Experiment Station, Guthrie, Okla., over a 15-year period, the water runoff was less than 1 percent, and the soil loss was only .016 ton per acre. Similar results have been recorded at experiment stations throughout the South and Southeast.

Bermuda is a highly palatable grass. It ranks high in protein, phosphoric acid, and calcium.

In many sections Bermuda, clovers, and lespedeza furnish almost year-around grazing. Fertilized and limed, such pastures often produce 300 to 500 pounds of beef per acre.

Bermuda alone will yield 7 to 9 months of grazing a year. It provides its greatest amount of green forage from May through October.

Soil conservation district cooperators are establishing Bermuda pastures on land which can-

Note.—The author is regional agronomy chief, Soil Conservation Service, Fort Worth, Tex.

not profitably be cultivated, and meadows on land formerly idle. Many of the pastures and meadows serve as waterways for the safe disposal of terrace runoff. Where adapted, Bermuda is the best grass for stabilizing individual terrace outlets, terrace outlet channels, and gullies.

Thousands of testimonials to the worth of Bermuda come from soil conservation district co-operators.

E. L. Thompson of Leona, Tex., for example, has found profit in the improvement of a 37-acre pasture which he superphosphated and seeded to Bermuda grass and white Dutch clover. With the



Almost pure stand of Bermuda (Brazos County, Tex.) on old cultivated field seeded to Bermuda in April 1946. Field was planted to vetch, which was turned under in March. Henry Schram, son of owner, and C. T. Figg, SCS technician, examine seed heads.

Bermuda established, the pasture gives year-around grazing for 32 head of livestock, although all the stock get some winter feed. Cattle grazing the improved 37 acres average 200 pounds more than Thompson's cattle on unimproved pastures. Cows on the improved pasture have a 100 percent calf record; calf crop for all the cows on the farm is 90 percent. The income from the extra calf crop in 1 year paid most of the cost of improving the pasture.

Six years ago 158 acres of Bob Gray's farm near Holland, Tex., constituted depleted row crop land covered with broom weeds and mesquite brush. Gray turned the 158 acres into pasture. Now a heavy stand of Bermuda grass carries a cow on 2 acres 9 months of the year. With the improved permanent pasture, plus supplemental pasture, Gray was able to increase his herd from 66 to 102 cows.

Bermuda is established by sodding, sprigging, or seeding. Sprigging is the setting out of relatively small pieces of dirt-free roots. Sodding is setting out chunks of sod and soil. Sprigging is cheaper.

On sandy soil, Bermuda sprigs can be harvested readily with a springtooth harrow and a side delivery rake. Sprigs or chunks of sod usually are planted on flat-broken land in 3-foot rows, spaced from 2 to 3 feet apart in the row. Bermuda can be established by this method any time moisture conditions are favorable; the most satisfactory time is early spring, while the grass is still dormant. Many soil conservation districts have developed machines with which to plant Bermuda grass.

While thousands of acres have been established to Bermuda by sprigging or sodding, our technicians believed seeding would be more rapid and economical if successful methods could be developed. Therefore, they encouraged many district cooperators to make trial seedings.

J. D. Bogard, a cooperator with the Gaines Creek Soil Conservation District, living near Indianola, Okla., followed the seeding recommendations of technicians and district supervisors in 1944. He comments, "In May and June of that year I planted 32 acres to Bermuda grass in 18-inch rows with a 2-row seeder. I used about  $\frac{3}{4}$  pound of seed per acre. The field was covered solid by August 15 and furnished grazing for 7 head of stock for 4 months. I had prepared a good





Part of a 115-acre pasture developed from an old eroded field that had been cultivated. Bermuda grass is the base vegetation.



Last cultivated in 1942, this field is now a profitable pasture that produces forage, hay and seed. It was badly eroded and worn out by continuous row cropping when it was taken out of cultivation. Bermuda and Dallis grass form the basic vegetation. White Dutch, hop and Persian clover are overseeded. The field was treated with 500 pounds of phosphate, 100 pounds of potash, and 1 ton of lime per acre.

seed bed—that's necessary. That fall I bedded the grass to protect against winter killing. All of my grass came through the winter and gave me excellent pasture throughout last summer and fall.

The next spring after I uncovered my Bermuda with a disc and harrow, I seeded 500 pounds of Kobe lespedeza in it. In July and August the Bermuda and clover had made such a good growth

that I was able to graze 30 head of cows and calves on the 32 acres."

Seeding Bermuda grass has been successfully done by Louis Gullett of Aplin in Perry County Soil Conservation District. Charles Reeder, work unit conservationist in the Perry County Soil Conservation District, reports that Gullett was eager to establish Bermuda as a base grass for his pastures, but has been unable to do so because of the labor and expense.

When he heard other farmers were having good luck with a new method of establishing Bermuda grass with seed which had been worked out by SCS technicians, he decided to try it.

He prepared the seedbed by breaking, disking and harrowing and let the seedbed settle. Just before planting he harrowed the field to kill some of the tender annual weeds which had started. Rows were laid off 40 inches apart with a fertilizer distributor, at the same time 200 pounds per acre of 4-12-4 fertilizer were applied. In the same furrow on May 29 he planted hulled Bermuda grass seed at the rate of 1 pound per acre. He used a special attachment he borrowed from the Perry County Soil Conservation District so he could plant as little as a pound per acre of the tiny seed. A good stand of Bermuda grass with 4- to 6-foot runners was on the ground before the growing season was over. This 3-acre plot was grazed continuously to keep down competition from other vegetation.

Gullett learned that a principal cause of failure in seeding Bermuda grass is that the 1-year-old plants freeze out the first winter. So he covered his Bermuda grass with one plow furrow to each row. With the threat of freezing past, he will disk and harrow the land to bring the runners nearer the surface.

Successful results have been obtained from seeding Bermuda grass by row-planting and broadcasting. Bermuda grass should be planted in the spring on a clean firm seedbed, with the seed covered lightly by firming. It is important that the seed be planted early to obtain a stand and good growth before summer drought begins. The seed can be planted in rows with a regular one-row or two-row planter with small grass seed attachments, a grain drill with grass seed attachment, a grass seed drill equipped to plant fine seed, or broadcast with a cyclone hand seeder or wheelbarrow seeder.

From  $\frac{1}{2}$  to  $1\frac{1}{2}$  pounds of good quality seed per acre seems to be sufficient when planted in rows; from  $1\frac{1}{2}$  to 3 pounds per acre when broadcast. The seeding rate for terrace outlet waterways should be increased 50 percent. Hulled seed should be used. Hulled seed gives a stand in 7 to 12 days while unhulled seed takes 3 to 6 weeks. When Bermuda is planted on eroded and depleted soil, a complete fertilizer such as 5-10-5 or 6-8-4 should be applied. Do not use phosphate alone. Turning a legume green manure crop into the soil before seeding will aid in providing needed nitrogen and organic matter.

Lespedeza and clovers should not be overseeded on seeded Bermuda grass until the second growing season.

These successful seeding methods, together with improved harvesting and planting equipment for use in sprigging or sodding, are speeding up the vegetating of thousands of acres of eroded land to Bermuda grass.

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## STABILIZING THE KALEVA "SAHARA"

By DANIEL Z. BALOG

THE FARMERS of Manistee County had been wondering for years why something had not been done to stabilize a sand-blow area  $1\frac{1}{2}$  miles east of Kaleva, Mich. It was an eyesore to farmers, a headache to real estate agents trying to sell land, and a tough problem to the county highway department. More sand than snow was plowed off the highway in this area every winter.

When the Manistee County Soil Conservation District was organized in August 1945 the directors felt that one of their first jobs would be to stabilize this sand-blow area. Frank Wilson, executive vice-president and cashier of the Kaleva State Bank, assisted the district directors and the Soil Conservation Service in contacting the land owner, Richard Shimmel of Detroit. Shimmel signed an application for assistance with the district and gave the directors permission to do as they saw fit to control wind erosion on his land.

Note.—The author is work unit conservationist, Manistee, Mich.



Directors digging beach grass planting stock along the shores of Lake Michigan: Edward Swanson, Martin Urka, Ray Anderson, Forrest Chrestensen, Harry Taylor and Floyd Beers.



Directors planting beach grass in the plow furrows.

The directors decided in their March meeting to obtain beach grass from a source along the shores of Lake Michigan and plant it in the dune area as one of the first steps in wind erosion control. On April 10, 1948, chairman Ray S. Anderson of Chief, treasurer Forrest Chrestensen of Onekama, directors Harry Taylor of Harlan, Floyd Beers of Marilla, Edward Swanson, Jr. of Bear Lake, work unit conservationist Daniel Z. Balog, and conservation aid Martin C. Urka met on the shores of Lake Michigan at 9 o'clock in the morning. They dug the beach grass from a plot of land belonging to the Onekama Township Board.

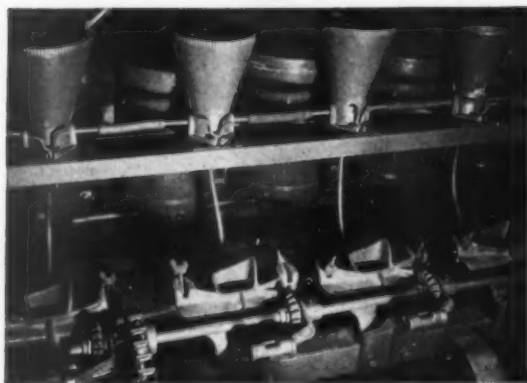
The beach grass planting stock and 1,000 red pine trees from the district line-out nursery were transported to the Kaleva dune area that forenoon. Ray Anderson plowed furrows 8 feet apart, run-

ning north and south on the west side of the blow-out area, with an 8-inch walking plow. The directors and Soil Conservation Service personnel planted the pine trees while Anderson plowed furrows 5 feet apart in the blow-out area selected for the beach grass line-out bed, using the 8-inch plow and his jeep as power. The beach grass was then planted in these furrows about 18 inches apart.

The directors expect to dig planting stock from this 1½-acre line-out bed to stabilize the rest of the area in 1949. They will also plant a 1-acre demonstration plot of black locust. Pine trees will be planted in this plot and the locust cut as soon as the pine trees are established. Another 1-acre blow-out area will be planted to African lovegrass and protected with brush until the love-

(Continued on page 67)

# GRASS SEED DRILL FILLS VARIED NEEDS



Close-up of cone-shaped boxes for planting fine clean seeds. The large boxes behind them are for fertilizer. Boxes for seeding trashy and fluffy seed fit on slots in foreground.

By W. M. NIXON

**M**ACHINES HAVE NOW been developed which are capable of planting both trashy seed and exceedingly minute seed in erosion-damaged areas of the Trinity and Middle Colorado River watersheds of Texas.

Revegetating work in the two watersheds during 1947 convinced Soil Conservation Service technicians that the 22 soil conservation districts working there did not have and were unable to build the kinds of drills required to handle all the native and imported grass seeds required to achieve both flood and erosion control.

Some useful plants, like Lehmann lovegrass, have more than 5,000,000 seeds to the pound. Those must be planted at rates of around  $\frac{1}{4}$  pound to the acre, and no commercial seeder or drill was available which could do the job uniformly. Those

Note.—The author is chief, regional agronomy division, Soil Conservation Service, Fort Worth, Tex.



Supervisors of Upper West Fork Soil Conservation District in Trinity River watershed of Texas visit farmer to watch operation of seed drill. Left to right: Cecil Bullard, Joe E. Wilhite, L. T. Hunter, Charles McClure (farmer), Rollans Hill, and Grady Millican. Note that only 3 of the machine's 7 packer wheels are attached. That's because it is being used to plant seed in rows.



seeds are planted clean, but other seeds are planted fluffy and trashy just as they come out of the combine which harvests them. Little bluestem is an example. Equipment for planting it evenly, trash and all, at rates of around 8 to 15 pounds per acre was needed.

Machinery was needed which could not only plant small clean seed and trashy seed but also could put fertilizer down and pack the seedbed at the same time.

Paul Browning, SCS equipment engineer, set to work with these various needs in mind. He looked over a drill made by the agency at its Woodward, Okla. Nursery—a machine that did not include a fertilizer distributor. He then drew up a set of plans embodying all the requirements.

A Denison, Tex., firm bid in the contract for building 48 of the machines which Browning designed and began delivery several months ago.

The drills are mounted on rubber tires and weigh about 2,000 pounds each. Regular farm tractors can pull them. Each drill has 7 boxes for planting small clean seed. Those boxes are mounted on a frame. A small brush in each box turns rapidly, moving the small seed through a tiny hole in a stationary plate. The hole customarily is about  $\frac{1}{32}$  inch in diameter.

On the drill also are 7 boxes for planting trashy seed. The drills use either cotton or corn plates to plant native grasses.

Seven fertilizer hoppers on the drills are standard farm equipment that can be used for putting out fertilizer at planting time or for side dressing. Seven 40-pound packer wheels trail the disks. A gear assembly allows 10 different speeds, enough to fit practically any situation.

It is estimated that the drills probably planted more than 17,500 acres of native and introduced perennial grasses on cooperating farms in the Trinity and Middle Colorado River Soil Conservation Districts this year.



**RANGE SOCIETY.**—A new society for professional range men, pasture specialists, graziers, ranchers, and range users held its first annual meeting at Salt Lake City in January. The second annual meeting is to be at Denver in late January or early February 1949.

Purpose and objectives are: (1) to foster advancement in the science and art of grazing land management, (2) to promote and support the maximum sustained use of forage and soil resources of the nation's grazing lands, (3) to stimulate discussion and understanding of practical range and pasture problems, and provide a medium for the exchange of ideas and facts among members and allied workers, and (4) to encourage professional improvement of its members.

Membership in this new range society is open to all persons engaged in or interested in range or pasture management. These liberal membership requirements reflect the broad training needed in the field of range management. The nearly 600 members represent the livestock industry, colleges and universities, Federal, State, and other agencies.

This society is a result of the desire of workers in the field for an organization where they could exchange ideas, discuss and agree upon procedures and practices, and, in general, further the maintenance and improvement of grassland resources. They felt that the forage resources which cover over one-half the total land area of the United States need greater emphasis because of their importance as one of our basic natural resources.

The society plans the publication of a journal treating range and pasture problems. It is hoped that the first issue of this journal will be released during 1948.

The present officers are: President, Joseph F. Pechanec, Portland, Oreg.; vice president, W. T. White, Portland, Oreg.; secretary-treasurer, Harold F. Hedy, College Station, Tex.; council members, F. G. Renner, Washington, D. C.; George Stewart, Ogden, Utah; L. A. Stoddart, Logan, Utah; D. F. Costello, Fort Collins, Colo.; B. W. Allred, Fort Worth, Tex.; and Vernon A. Young, College Station, Tex.

**EROSION IS A THIEF.**—The reduction of the depth of topsoil by erosion from 13 or more inches to 1 to 2 inches reduced the corn yield from 93.4 bushels to 49.2 bushels at Fowler, Ind., states R. E. Umland, SCS research, Washington, D. C. This represents a loss of 44.2 bushels in production capacity, or a 47.3 percent reduction. Similar results were obtained at Bethany, Mo., and at other locations. O. R. Neal, SCS research, New Brunswick, N. J., found that surface soil exceeding 6 inches in depth produced 184 bushels of potatoes per acre as compared with a yield of 135 bushels per acre for those portions of the same fields averaging less than 6 inches of topsoil.

**BURNING REDUCES YIELD.**—Burning pasture decreased yield of hay more than half in 8 years, states Harry M. Elwell, SCS research, Guthrie, Okla. An area protected from grazing and fire made 2,886 pounds of hay per acre as compared with a yield of 1,366 pounds for land protected from grazing but burned annually. Another area protected from fire for 11 years produced 3,907 pounds of hay per acre compared with a yield of 1,858 pounds for an adjacent plot which was burned only twice during the 11 years. A burned wooded area lost 12 and 31 times more soil and water, respectively, than adjacent, unburned areas.

# AN ALL-AROUND *Conservationist*



By GLENN K. RULE

**A**LL-AROUND CONSERVATIONISTS are hard to find, but the Rev. William H. Stauffer, a Mennonite preacher and a successful farmer of Sugar Creek, Ohio, comes as near filling such a role as any man I know.

I had heard about his success in rehabilitating three formerly abandoned hill farms in Tuscarawas County. So I went there in late May and found his meadows knee high and almost ready to cut, but I also found the churchman shoulder deep in community affairs. "Right now," he said, "we are busy trying to get a cooperative canning unit established so we can can chicken, fruit, vegetables, and so on. You see, we need something here to give employment to some of our young folks so they won't need to go off to a factory to work."

The day before he had been in Columbus, attending a meeting of leaders who were discussing pending farm legislation in Washington. On the following Sunday he would discharge his usual responsibilities at the church, in addition to conducting a funeral service. When you consider that Mr. Stauffer is a member of the Board of Supervisors of the Tuscarawas Soil Conservation District, that he is on the Ohio Farmers' Institute speaking staff, and that he makes rather frequent and long trips into the western states in the interest of his church, you can rightly conclude that he is a busy man.

Note.—The author is executive assistant to the chief, Soil Conservation Service, Washington, D. C.

Herbert Marshall, the district conservationist, drove me over to Sugar Creek where we met Curtiss O. Steele, the local farm planner, the Rev. W. Stauffer and his son, Bruce. We paused under some towering oaks near the roadside. A few of these giants had been cut and sold for lumber, but I noticed several butt logs still remaining on the ground. "These logs," said Mr. Stauffer, "may have an occasional nail and I have been unable until recently to get any sawyer to take a chance on cutting them into lumber. I have located a man who will take that chance and saw them just before he is ready to have his saws sharpened."

On leaving the small oak grove, we went by one of the two farm ponds on our way up one of many hills. On the way up the first hill, the lower part of which is now in pasture, Mr. Stauffer began to unfold his story of the rejuvenation of the land. He interrupted himself occasionally to ask Herb if the pasture shouldn't be clipped again or, "Isn't this grass about ready to cut for hay? You see I'm just itching to cut this grass myself."

Apart from such incidental remarks, Mr. Stauffer held to the main theme of land restoration. "My imagination," he said, "was caught by the idea of taking a piece of land worn out by man, and attempting to put it back into the productive condition in which it was when God first set man over it. Incidentally, the purchasing of a piece of land which no one else wanted also fitted my pocket-book. It seemed that Providence was with me because, within 3 years, three adjacent farms became available. A doctor friend and I embarked on a great adventure.

"We bought the first farm in the fall of 1940. No one wanted it, so we bought it for \$2,400. Immediately, by selective cutting, we obtained white oak timber which sold for \$1,400. Thus for \$1,000 we had obtained a comparatively new four-room house, an old 35 by 70 log barn, about 30 acres of land suitable for tractor farming, and 90 acres of hilly woodland and pasture.

"The following spring we bought a 55-ton car of lime, and 2 tons of 20 percent superphosphate. We applied 3 tons of lime and 400 pounds of phosphate per acre on the pasture. We plowed 13 acres, top-dressed it with 3 tons of lime and 400 pounds of 0-12-12 per acre. Then we sowed 1 bushel of oats and 15 pounds of alfalfa per acre. When the oats were in full milk stage we cut them for hay. We had a wonderful stand of alfalfa which we pastured after October 25. The following winter we hauled 115 loads of manure onto these 13 acres.

"That same spring we also purchased 2,000 evergreens, 1,000 red oak, and 1,000 black locust trees. These we planted in contour furrows 7 feet apart.

"In the summer of 1941 we bought another 55-ton car of lime. We plowed 5 acres and applied lime and fertilizer as before. Then we broadcast alfalfa with no cover crop. Again we got a wonderful stand. The remaining lime plus some AAA fertilizer was broadcast on the permanent pasture.

"In the fall of 1941 we bought the 120-acre farm next to ours for \$3,500. It, too, had been partly idle and partly farmed in a destructive fashion. About 50 acres was good tractor farmland, and the rest was woodland and pasture. Through selective cutting we obtained white oak timber which sold for \$500. From the tops which the lumber company left and from low-grade trees, we sawed enough lumber to build an extension to the second barn, a 20- by 30-foot hog shed, and a car and tractor garage and corn crib. We did the carpentry work ourselves, and bought only the siding for the barn and the cement, sand, and gravel for the foundation.

"In the spring of 1942 we purchased 6,000 evergreen and 4,000 tulip poplar seedlings which we planted in contour furrows 7 feet apart, on hill-sides which should never have been cleared. In the spring of 1943 we planted 4,000 evergreens. That year we also purchased two 55-ton cars of lime for both pasture and field treatment.

"Just below the house on our first farm is a small stream fed entirely by springs. We hired a 6-ton crawler tractor and slip-scraper, and put an earth dam across this stream. We have a dam about 90 feet wide, 175 feet long, and approximately 10 feet deep at one end. At the shallow end we hauled in 20 tons of fine gravel for a bathing beach which we roped off for our youngsters.

This pond is stocked with bluegills and bass. Our families vacation here.

"In the spring of 1944 the third farm was sold at public auction. A neighbor bought it for \$4,500, but never moved onto it because he doubted whether he could make a living there. So he sold it to us. Immediately we sold \$1,000 worth of timber, and a steep hill with about 3 acres of bottom land for \$500. On this farm we have a 40- by 80-foot bank barn and an old two-story, four-room log house.

"In 1943 I helped sell the idea of a soil conservation district to the farmers of Tuscarawas County, and later was elected as one of the supervisors. We lost no time in having the district lay out our entire farm for strip contour farming with a rotation of corn, wheat, alfalfa and clover, and alfalfa and timothy. This was one of the best moves we ever made.

"At the suggestion of the county agent and the representative of the Soil Conservation Service in our district, we experimented with the trash-mulch method of seeding alfalfa. We selected 5 acres of land which had been lying idle for 3 years. One-half had nothing but poverty grass and broom sedge growing on it; the other half had corn stalks and weeds. We double-disked the area once and applied 15 tons of fertilizer. We double-disked it again, and applied a ton of 0-12-12 fertilizer. We doubled-disked it once more and broadcast 8 pounds of alfalfa, 4 pounds of clover, and 3 pounds of timothy per acre.

(Continued on page 62)



Don Hostetler with sign at entrance to first farm purchased jointly by two families.



Doren Baab operates tractor while Mr. Stauffer demonstrates his power-driven post-hole digger.



Family in the strawberry patch. Stauffer



Two springs converge here, one of hard water, one of soft. Don chooses a drink of hard water.



Stauffer buildings are adequate practical. and doors was purchased; the me fro



This pond is stocked. Some day it will provide its share of inland "seafood."



Air view of Stauffer slopes. Slope on





erry path, Stauffer, Bruce, Mr. Stauffer,



"My best cow."



adequate ectical. Material for foundation  
used; the me from salvaged buildings.



Sleek Hereford herd shows the result of good pastures.



pes. Steps on contour prevent serious

"Our families vacation here." Don and youngsters in boat; tulip  
poplars and pines on hill in background.

(Continued from page 59)

Then, after going over it again once with the cultipacker, we went home and somewhat skeptically waited upon the Lord. However, in due season we had our reward, a wonderful stand of both alfalfa and clover. Had it not been for the dry summer we would have taken a good cutting off about July 10. Instead, we turned 35 head of cattle in for about 5 days. Then we clipped the weeds. In September we turned the cattle in again for 4 days, and in October we turned them back a third time for a few days.

"The first farm we purchased had always been owned by one family and their direct heirs. The original sheepskin deed was signed by President Van Buren. You see the present generation is about 10 to 15 years older than I am. We bought all of this land from estates that were being settled. The heirs didn't see the opportunity or the feasibility of keeping most of the land in grass or pastures. They thought the land was too steep for modern tractor farming. It is steep but we use our implements on the contour and practically everything is done with an eye to improving either our pasture or our hay crops. That slope over there is steep (pointing to an opposing slope across the farm), but you see that manure spreader and tractor are getting along okay.

"Through the generous use of lime, phosphorus and manure we have helped grass to heal numerous gullies, we have stopped all serious erosion, and we are now being rewarded in many ways. Last season we threshed just short of 800 bushels of wheat from 21 acres. This was from land for which we paid about \$20 an acre and another \$20 an acre for improvements. We now have over 60 head of Hereford cattle. You might say our chief cash crops are beef and wheat. We have sold some timber, to be sure, but we sold timber only on a selective cutting basis. We sold only trees that should be harvested. If we keep fire and livestock out of our woods, I believe we can sell annually enough timber to pay the taxes."

We walked over each of the three farms that comprise the present unit of 260 acres. All of the formerly over-used and battered slopes are under a protective mantle of grass, small grains, legumes or trees. The rolling hills are beautiful, but this is not a show place. You are not greeted with bright paint but all of the buildings are either well cared for or they are being torn down and

the fine old timbers are carefully used to enlarge or repair present structures.

As I left the Reverend Mr. Stauffer on the buggy-lined streets of Sugar Creek, he proudly pointed to a large, neatly kept frame building. "That's my church over there." When I thought of his work at the church, the farms that were coming back to life, the fish ponds, the trees, and especially of his practical concern for young folks in the community, I knew I had been with an all-around conservationist.

## FOUR DISTRICTS, ONE WATERSHED



Typical submarginal land misused under private ownership. Adjoining Backbone State Park on east, it represents hundreds of acres now pouring silt into the reservoir above Forestville Lake.

By A. M. HEDGE

THE CONSERVATION COMMISSION of Iowa is faced with a critical problem of erosion in the watershed of Forestville Lake, located in Backbone State Park on the south branch of the Maquoketa River. This watershed lies wholly within districts organized on a county basis. This means that the four districts covering Delaware, Clayton, Fayette, and Buchanan Counties are concerned in this watershed problem.

Last fall members of the four district governing bodies met at Strawberry Point, together with representatives of the State Soil Conservation Committee, the State Conservation Commission, the Extension Service, and the Soil Conservation Service. Ways and means were discussed for making a concerted attack on critical soil problems.

Note.—The author is chief, Project Plans Division, Soil Conservation Service, Washington, D. C.

It was decided to organize "The Four-District Soil Conservation Watershed." Activities of all agencies are to be harnessed together through a committee composed of one commissioner appointed by the governing body of each soil conservation district. As advisory members there is one representative of each County Extension Program Planning Committee on Land Use and Soil Conservation, the county extension director from each of the four districts, the district extension supervisor, the district conservationists of the Soil Conservation Service in the watershed, and a representative of the State Conservation Commission. The watershed committee serves in an advisory and coordinating capacity and represents all four soil conservation districts in working relations with State and Federal agencies, but does not supersede the authority of the individual soil conservation districts as provided by law.

The committee meets quarterly on designated dates or oftener on call by the chairman. Their functions and duties are to develop and keep current a watershed program and work plan, to request necessary assistance from cooperating State and Federal agencies, to prepare a yearly schedule of operations that is coordinated with county extension programs and district work plans, to review progress and see that the programs and work plans are being carried out, to keep the respective district governing bodies informed regarding developments in the watershed, to make recommendations on policy, and to prepare an annual written report.

A memorandum of understanding has been executed between the Iowa State Conservation Commission, the Iowa Agricultural Extension Service, the Soil Conservation Service, and the Four-District Soil Conservation Watershed. The Four-District Watershed Committee agrees to carry out the functions and duties assigned under the program and work plan, and to make office space available to State personnel working in the watershed. The Iowa Extension Service agrees to employ a full-time worker for the four counties, to be known as district extension director (soil conservation). He will be administratively responsible to the Director of Extension. The State Conservation Commission will pay all travel expenses of the district extension director (soil conservation), supply materials, postage, etc. needed for office and incidental purposes, and supply funds for hiring a conservation aid if he is needed.



Watershed committee studies problems on farm adjoining State park on north. Only infertile, rocky subsoil remains. Complete crop failure resulted in 1947. Notwithstanding high prices, field is idle.

The Soil Conservation Service agrees to provide office space, desk and other office accommodations in one of the district offices, equipment such as hand levels, the services of available technicians and technical direction of any conservation aids hired by the Conservation Commission.

The watershed of Forestville Lake includes about 74,500 acres and 580 farms in addition to the State Park of 1,411 acres. The major physical problems occurring in the watershed include improper use of land, serious soil erosion on upland farms, subsurface drainage on extensive areas, stream-bank erosion and channel scouring, siltation and flooding. Efforts of farmers to solve their own problems have been handicapped by lack of facilities for carrying on educational and demonstrational work on soil-conservation methods and practices.

Objectives of the Four-District Watershed, as stated in program and work plan, are to supplement and intensify the soil-conservation activities of the four soil conservation districts in a clearly defined watershed where critical problems exist. By so doing it is believed that farmers will benefit by preserving their lands, improving its productivity, and increasing its net income. Erosion, flood and siltation damage along public roads can be reduced at a saving of public funds. Public recreational opportunities in Backbone State Park can be improved and preserved.

To assist toward these objectives the educational program includes activities to acquaint farmers and townspeople with the seriousness of the erosion and fertility problems, and with the methods and practices that should be carried out. The district extension director (soil conservation) will advise farmers on approved conservation practices

relating to land use, soil treatment, crop systems, pasture and woodland management; conduct demonstrations in contouring, strip cropping, terracing, grass waterways and other conservation practices; hold educational meetings with small groups of farmers on a community, school district or watershed basis; assist with meetings of civic organizations, business groups, schools, etc.; assist in organizing groups of farmers for farm planning activities.

Farm conservation planning will be carried out by the several districts, working through groups of farmers insofar as possible, and utilizing the services of Soil Conservation Service technicians. The district commissioners may give priority to groups within the watershed. Technical assistance will be limited to farms having a complete conservation plan or to land owned or controlled by the State.

The Watershed Committee and the districts will give technical consultation to the State Conservation Commission or any other group or individual considering the purchase of land as a means of converting it to its best use so as to prevent further erosion damage. After the land has been purchased the districts may provide technical assistance in planning its development and use. Definite plans for maintenance will be set up in the annual schedule of work.

*The Four-District Watershed Committee provides a practical example of how to focus the resources of all agencies on a coordinated plan of action in a watershed that includes more than one soil conservation district.* In many States districts are organized on a county basis even though many of the conservation problems can best be solved on a watershed basis. The people of Iowa are rapidly demonstrating that organization on a county basis need be no handicap to a coordinated program in a watershed. In fact, it may even turn out to have some advantages.

**FARM INCOME INDEX.**—Farms with high land capability produce higher yields and net incomes than farms with low land capability, finds H. O. Anderson, SCS research, La Crosse, Wis. Farmers operating small farms with high land capability averaged \$1,331 greater earnings than farmers operating small farms with low land capability. The differences favoring high land capability for large farms averaged \$2,266 per farm. While land capability classifications are not intended to measure productivity differences, these records indicate that crop yields as well as net earnings were higher on farms with high land capability ratios than on farms with lower ratings. Insofar as erosion decreases yields, the differences in income are likely to become greater with the passing of time.

## PIONEERS, OH, PIONEERS!

By MARGARET SNYDER



First house built on the farm, and the first built by Cook. The calf is a registered Guernsey.

**Y**OU'D HARDLY EXPECT to find pioneers in Prince Edward County now. At least not the kind that have chopped a farm out of untouched forest. But if you should drive 5½ miles west of Burkeville, Va., on Road 612, you would find a husband and wife who have done just that in the past 30-odd years. They are Mr. and Mrs. A. L. "Buddie" Cook.

They don't live in a log cabin. Since REA came into their neighborhood their house has all the modern conveniences that go with electricity—lights, water, a bathroom, an electric iron. If you stop for a visit, Mrs. Cook will show you her wonderful new washing machine, and tell you how she gets her washing and ironing all done by 2 o'clock Monday, instead of spending 2 days at the job. Some days she has so much time on her hands she doesn't know what to do with it.

It wasn't always that way. When they borrowed money to buy the place, during the first world war, it was solid woods, but that was all they could afford. Cook says they had to cut their way in, and he remembers how he and his wife put up the frame of their little house. They ceiled-in one room, where they put the cook stove, but the rest of it was just boarded over. At night they could see

Note.—The author is with the Extension Division, University of Virginia, Charlottesville, Va.





A. L. Cook and son, Calvin, cutting red clover hay which is grown in a 3-year rotation with corn and small grain.

the moonlight through the cracks, and many a time the snow blew in. "But we toughed it out," Cook says.



Mr. and Mrs. A. L. Cook.

The first thing was to get some land cleared. Every one of the 100 acres was covered with hardwood—big oaks and other valuable timber that they gave away or burned. One old man who lived in the neighborhood all his 97 years said the place had been big woods when he was a boy, and that his granddaddy said nobody'd ever put a plow in that soil. The Cooks made a tobacco bed the first thing. It was a lot of work, but it made them about all the money they had. They raised vegetables to live on. They had to rent some corn land in the beginning, but it was poor and washed out so badly they hardly made a crop. They couldn't mow any hay until they could get stumps out of a field, so they had to feed their one horse and one cow on corn stover.

The children came along in those years, too. Four of them were girls, so they couldn't do much

outside work. "But they helped in every way a woman could," Cook declares. He's mighty proud of his girls, and of the son who was their fourth child.

The family made out the best they could, but in 1929 they had sickness that cost them an awful lot, and a hailstorm that pretty near cleaned them out. The bank was mighty good to them through the drought and the depression of the next couple of years, and in 1933 the crop cleared them of debt. The next year they got a car, and in '36 and '37 they were getting on pretty well.

But then Cook got dissatisfied with his farming. He'd set up a rotation the best way he could, but he saw his land washing away faster than he could make it. "I got disgusted," he remembers. "I'd done the best I could put forth but it wasn't enough. It cost me too much to clean up that land, to see it go down the creek."

About that time a CCC camp was set up in the neighborhood to work at stopping soil erosion. Some of the folks around got farm plans from the camp workers. "But those CCC youngsters kind of fretted me," Mr. Cook says. "I looked over some of the other farms and I didn't like the set-up. Besides, they talked too fast and knew too much."

Then in 1940, the farmers in Prince Edward and three of the neighboring counties got together and organized the Piedmont Soil Conservation District. They got Howell E. Lacy, of the Soil Conservation Service, to help them plan their farming the conservation way. "When Lacy came to see me about my farm," Cook says, "he was so slow explaining that I thought we'd struck up something, and I accepted the plan."

Afterwards, he got to thinking about all the fertilizer the plan called for—300 pounds for every acre each year—and he worried about where he'd get the money for it. He sent word to Lacy to come out and see him again; the Cooks had had a hard time getting out of debt and they didn't want to get back in again.

He was grading tobacco when Lacy came to talk to him about it, and the two men worked together at that job for about 3 hours, talking the plan all over again. Finally Cook decided to go ahead with it, and they agreed on a time for Lacy to lay out the first terraces. When they were marked out, the Cooks went to work and built them, and Lacy checked them afterwards.

They terraced 10 acres that first year, and kept

working at it until now the Cook farm has 32 acres in terraces. They made some other changes too, but the plan ran 5 years and it was fixed so the Cooks could change things a little at a time, the way it was easy for them.

When the 5 years were up Mr. and Mrs. Cook decided they wanted to go on working with the conservation folks. "We'd both worked hard all the time," Cook says, "but maybe we didn't know how to put things together. Our agricultural leaders are wonderful men. You can't make a mistake if you stick to 'em. The way they help us is a wonderful opportunity—the county agent, the conservation folks, and the AAA. They know so much, and when you put that together with the little we know you get somewhere."

The Cooks say the best thing about conservation farming is the way it has stopped the soil from washing. Take that gully that was so big they lost their boy in it one day.

Mrs. Cook laughs a little about that now. The boy was about half grown then, and he was out one day on a horse minding the cows. All of a sudden they didn't see him anywhere. Cook went out to look for him and found the boy had ridden down in the gully to keep out of the wind. "It was so big he didn't show at all, even sitting on a horse."

A little later the CCC boys were going to do some fill-ins on that gully but they were called off for defense work, so Cook and his son did it themselves with a pile of stones and an old horse and a plow. Now that gully is all grassed over so smooth you can drive any piece of machinery over it. Mrs. Cook says there used to be fine blackberries in that gully, "And they were real handy to the house. But I guess the hay on the meadow strip is worth more than the blackberries. It makes more milk in the can. That's one way to turn black into white!"

The place has improved in a lot of other ways, too. The Cooks still raise 5 acres of tobacco each year, but its yield has stepped up more than 25 percent over what it was before they started farming the conservation way. They run a 3-year rotation in 9-acre shifts of corn, small grain, and hay, besides 2 acres of alfalfa and 17 acres of permanent pasture. Now the Cooks are getting double the old yield in corn and grain, and last year they had hay to sell. This spring they are seeding 3 more acres of alfalfa. They keep a dozen cows and calves now and sell cooler-grade milk.

Cook says it's interesting and profitable. The cows made 50 percent over cost last year, and so do the 80 to 125 chickens raised each year.

They put on 400 pounds of fertilizer now, and Cook says, "If I didn't have the money I'd borrow it for 2 years to put that fertilizer under my crops. It makes the crops that much better."

He keeps close records. "It looks to me like it's useless to continue doing a thing unless it's paying," he says. "It doesn't take so much time. You should put down everything you spend or take in every day, but never let it go over a week. I make up a monthly report from the daily notebook, and then the Christmas nights I put it all in a yearly book. Doing business without books is blind. The books help with the income tax returns, too."

The farm has done so well the last few years that now they've fixed the house till it's as comfortable and pretty a home as you'll find anywhere. "We just forgot about the house to give the children their education," Mrs. Cook says.

The first four children finished high school, and now the youngest girl is attending Farmville High School. Two of the girls went to business college afterwards, and one went to Farmville State Teachers College, but the boy never wanted to go any farther than high school. He did so well with his 4-H corn and livestock projects that he had 10 days at Blacksburg one summer. They're real pleased that he wants to stay on the farm with them.

Three of the girls married soldiers and now Mrs. L. M. Jewett lives in Maine, Mrs. J. V. Romeo lives in California, and Mrs. D. T. Glenn lives in Farmville, Va. Mr. and Mrs. Cook went to visit Mrs. Jewett in Maine last spring and Cook says, "We saw some sights in that country that I never thought was in the world."

They went right off the bat when the notion struck them one morning when spring was just opening. Cook had never been outside of Virginia, except a little way in North Carolina, and Mrs. Cook had never gone farther than Washington. They followed the trail along the Kennebec River clear up into Canada, and saw logs coming down the river "just like those pictures we used to see in the geography books in third and fourth grades," Mrs. Cook says. They saw the White Mountains, and Boston, and the Belgrade Lakes beyond Augusta, Maine, and a powerful dam that makes electricity for New York City.

They were gone 7 days, and the night they got back it rained—the first rain they'd seen the whole time. "Next day we had a season," Mr. Cook says, "and we planted tobacco. But we had plenty to think about while we planted, and to tell the boy and girl who stayed at home to tend to the place."

The Cooks think maybe this conservation farming is a new kind of pioneering, the kind a family can do even on land that's been used a long time.

## KALEVA "SAHARA"

(Continued from page 55)

grass gets a good start. Shimmel is cooperating with the Manistee County Soil Conservation District by planting the area to the south and west of the blow-out area to a mixed planting of Scotch and red pine trees.

The district directors have the owner's permission to erect a permanent sign advertising their wind erosion control work with the Manistee County Soil Conservation District and the Soil Conservation Service.

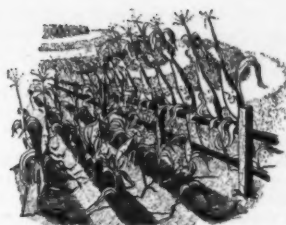
## RESEARCH POINTERS

Prepared by J. H. Stallings

**ORCHARD CULTIVATION.**—A type of cultivation which results in "stubble mulch" by leaving cover crop residues on the soil surface is one of the most effective ways of utilizing such residues without sacrificing their protective and soil-building values, believes John T. Bregger, SCS research, Clemson College, S. C. On peach sites where the soil and tree rooting are deep enough, continuous cover crops are occasionally used without any cultivation. Significant reductions are being made in both the frequency and duration of cultivation without decreasing tree growth or yields.

**FRUIT TREES NEED HELP.**—Clean cultivation of rolling orchard land has resulted in partial or total destruction of many acres of good fruit land, finds John T. Bregger, SCS research, Clemson College, S. C. Despite the wide acceptance of the traditional cultivation system of peach orchards, evidence has been piling up which indicates that certain conservation practices, including continuous vegetative and mulch covers, modified sods, or simply a short annual period of cultivation are both practical and successful.

**CULVERT OUTLETS.**—Erosion to a depth of as great as 8 feet may be expected for a culvert 3 feet square, while depth of erosion for other culvert sizes may be expected to vary in proportion to the culvert size for similar discharges, states Fred W. Blaisdell, SCS research, Minneapolis, Minn. The use of a sill at the end of the apron reduces the total volume of erosion and the use of a primer reduces the velocities on the apron, the depth of erosion at the cut-off wall, and the total volume of erosion.



**CONTOURED CORN.**—Sweet corn produced 2,999 more ears and cabbage 1.82 tons more per acre when cultivated on the contour than when cultivated with the slope, states E. A. Carleton, SCS research, Geneva, N. Y. The corn on contour matured much more uniformly than corn in rows paralleling the slope and had fewer small ears.

**CAN'T IRRIGATE HERE!**—Efficient use of irrigation water is almost impossible on steep fields which are irrigated in furrows directed down the steepest part of the slope, reports Stephen J. Mech, SCS research, Prosser, Wash. Production of row crops on such slopes, even with careful irrigation, very short length of run, and minimum size of stream, results in very poor moisture distribution over the field and the removal of at least 1 inch of soil in every 12 years.

**HANDLING STUBBLE MULCH.**—Decay alters the degree of protection to the soil by changing the amount and properties of a straw mulch, finds T. M. McCalla, SCS research, Lincoln, Nebr. Decay changes tough, new straw to a brittle condition. Too much brittleness causes the straw to break into small pieces which work into the soil and decay more rapidly. From the standpoint of maintenance of straw mulch for soil and moisture conservation, it is obvious that plant mulch deterioration is inevitable. By proper management of the straw mulch, so that there will be little mixing with the soil and so as to avoid mechanical fragmentation by tillage machinery as much as possible, decomposition can be delayed long enough to permit protection of the soil during the interval between crops.

**MEADOWS WITHOUT PLOWING.**—Alfalfa-grass meadows can be established successfully without plowing on eroded, unproductive broomsedge and poverty grass land, discovers H. L. Borst, SCS research, Zanesville, Ohio. Lime, fertilize, and disk the land before seeding. The "trash mulch" produced by disking protects the land from the destructive forces of rainfall and erosion. It promotes infiltration, decreases and controls runoff, eliminates erosion and conserves moisture by decreasing surface evaporation. This protection cannot be provided by plowing, but it can easily be by disking the soil in the proper way while preparing the seedbed for the new seeding. Seeding the meadow directly, without the conventional small grain, eliminates competition by the so-called nurse crop. Meadows thus established have produced an average of 2.5 tons of alfalfa-grass hay per acre the year after seeding. The yields obtained are almost 1 ton greater than those from the average hay field in the State.

**OUTLET STRUCTURES.**—Depth of erosion in the channel bed is not reduced but the location of the scour is moved further downstream when the wingwall is placed as an extension of the basin sidewall, finds Albert N. Huff, SCS research, Minneapolis, Minn. The end sill is effective in keeping erosion away from the end of the basin by deflecting the flow of water upward and away from the



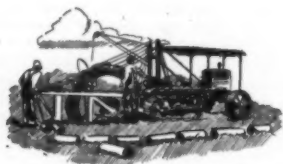
stream bottom. A vertical baffle of a square cross-section with dimensions equal to one-tenth the width of the spillway at the bulkhead, located one-third the length of the outlet from the downstream end, distributes the flow in the outlet so that it leaves the basin without spreading the outside walls.

**VEGETAL-LINED CHANNELS.**—Permissible velocities for bare earth channels are probably not more than 1 foot per second, declare W. O. Ree and V. J. Palmer, SCS research, Stillwater, Okla. The retardance coefficients for grass-lined channels are much higher than those for bare earth channels; consequently, the former will support higher velocities than the latter.

**DRAINAGE UPS YIELD.**—Corn yields were increased from 19.5 bushels to 43.7 bushels per acre by drainage, states R. E. Uhlend, SCS research, Washington, D. C. Wheat yields were increased from 11.2 bushels to 22.7 bushels per acre and hay from 0.84 ton to 2.20 tons. These findings are from 74 farms in 3 counties in Maryland.

**FORAGE COVER IN WATERWAYS.**—There appears to be no direct connection between the amount of forage cover and soil loss in waterways, reports M. B. Cox, SCS research, Guthrie, Okla. The type of grass, the slope of channel, and possibly other factors have more effect upon the rate of soil loss than does a slight change in the amount of cover.

## SOUTHEAST



**DRAINAGE CORPORATION.**—Twenty district cooperators of Green and Pitt Counties, N. C., decided tile drainage work wasn't being applied fast enough in their area. They formed a corporation, subscribed \$10,000 in stock, and bought a trenching machine and trailer. They contracted with two men, trained in tile drainage by Soil Conservation Service technicians, to operate the equipment.

W. C. Eagles, work unit conservationist, encouraged the project because the Government-owned trencher was not able to do all the work the farmers were ready to do.

During the first year of operation, 80,000 linear feet of drains have been completed, improving more than 200 acres on stockholders' farms. The farmers intend to do custom work for others when ditching is completed on their own farms. SCS workers assigned to the Coastal Plain Soil Conservation District inspect and approve the work of the corporation employees who plan and stake the drainage system.

**NEGROES FORM CLUB.**—Robert E. Lee, a Negro farmer in the Edisto Soil Conservation District in South Carolina, applied to the district in 1945 for a conservation plan. There was only one Negro cooperator in that section at that time. A plan was developed with Lee for his farm and all practices have since been applied.

This farmer and the Vo-Ag teacher in his community organized the Trenton Soil Conservation Community Club, obtained 28 applications for farm plans, and have held meetings for interested farmers every month since then. Twenty plans have been completed and all work is progressing satisfactorily. Lee now builds all terraces for farmers in that community and applies to the work unit office for assistance other farmers may need.

**DISTRICT PLANS 110 FHA FARMS.**—The Farmers Home Administration established a special fund to pay for labor and materials needed by 110 of their clients to apply practices planned with the Wiregrass Soil Conservation District in Alabama. Emphasis was placed on planting pine seedlings, kudzu, crotalaria, and permanent pastures.

Soil Conservation Service workers interested the FHA supervisor in Coffee County in giving this assistance by showing him the need for soil conservation. Result: 110 farms planned; more than 1,000,000 pines and 100,000 kudzu plants set out; and many crotalaria and permanent pasture seedlings made.

**STATE FORESTER AIDS DISTRICT WORK.**—The South Carolina Commission of Forestry has been especially active in helping soil conservation district cooperators with the forestry phase of their district programs. Calhoun County District reports aid in getting 225,000 pine seedlings planted with good results on 42 district cooperators' farms. These farmers also established 20 miles of firebreaks, using tractors and plows furnished by the Commission of Forestry at low cost. Help of SCS technicians was requested to assure location of firebreaks where planned in the complete program for each farm.

The Orangeburg District reports 500,000 tree seedlings were received from the Commission of Forestry early in 1948 for plantings on 123 district farms. The Commission was especially cooperative in grouping tree orders going to district cooperators. The Commission also advised the district where to get planting dibbles. The supervisors bought three dozen dibbles, which were made available to cooperators at cost.

**DISTRICT PLANS.**—Commissioners of the Carroll County Soil Conservation District in Mississippi requested the local Production and Marketing Administration office to assist in getting farmers to apply for district plans and to supply the work unit conservationist with such farmers' PMA quotas. Seventy-five applications have been made under this arrangement during the past year. Each cooperator has already applied one or more of the planned practices.

**LUPINE PRODUCTION.**—The SCS work unit conservationist at Baxley, Ga., took the administrative assistant of the Production and Marketing Administration in Appling County to see the only field of blue lupine in the county. They talked with the owner of the 12-acre planting and agreed to work together to get blue lupine used more extensively.

The PMA clerk interested local seed dealers in supplying lupine seed through the purchase order plan. By using a book of photographs furnished by the SCS, he convinced many farmers who visited his office of the value of this soil-building crop. Leading farmers were visited by SCS and PMA workers.

A combine owner was induced to plant 100 acres to blue lupine and harvest the seed. As a result, 30,000 pounds of seed were planted the following fall and 250,000 pounds during each of the past two years. Three combines are now harvesting seed in the county and farmers are getting good results. Nearly every farmer in the county knows of the use of this winter legume in conservation farming.



**MINISTERS AID DISTRICT WORK.**—Supervisors of the LaRue Soil Conservation District in Kentucky invited all the ministers in the one-county district to a dinner meeting recently. The program included a motion picture on districts, an inspirational talk by an out-of-county minister who is an ardent supporter of soil conservation, and a request from the supervisors for the ministers' help.

Each minister present made brief comments, pledging his support and help in the soil conservation work. Since then, they have preached at least one sermon each on man's stewardship of the soil. While talking with farmers individually, they have encouraged them to apply conservation measures on their land.

As a result, reports C. A. McElroy, work unit conservationist, community interest has been awakened and soil conservation practices are being applied at a faster rate. Several hard-to-reach farmers have become interested and have asked that SCS technicians help them develop programs for their farms.

## UPPER MISSISSIPPI



District commissioners at picnic. Top: Ben D. Lee, J. P. Burns, Kenneth Wagner, Ed Kinsey, J. D. Misbach and R. G. Owen. Middle: Glen Sorden, S. T. Yates, C. T. Anderson, Homer Vincent, Joe Knotek and Howard Anderson. Bottom: H. Howard Oak, district conservationist; Frank H. Mendell, state conservationist.

**FOUR DISTRICTS GET TOGETHER.**—Once every 3 months there is an all-day meeting of the district commissioners of the Iowa, Johnson, Washington, and Keokuk Soil Conservation Districts in Iowa. In addition to the three commissioners from each of the four districts, the county extension directors, farm planners, and the district conservationist usually attend.

The idea originated 2 years ago. Enough interest resulted from the first meeting to keep the get-togethers going regularly in Work Group 18 ever since. The commissioners alternate as hosts.

The chairman of the home group usually is master of ceremonies. A program sheet prepared by the host district is given to everyone present. The meetings usually begin at 10 a. m. so the commissioners from a distance have ample time to make the drive. Sessions usually close around 3 in the afternoon.

A special attraction is lunch. A turkey dinner in the Washington District (turkey county of the world) or a home-cooked Dutch dinner in the Amana Colonies is something to look forward to with pleasure.

Chatty contacts and the sharing of problems often lead to helpful suggestions. Many a stumbling block is overcome. Some of the commissioners have been requested by commissioners in another district to assist in carrying

out programs, county meetings, and other events. On one occasion, the commissioners pooled their ideas on the holding of contour schools and, when a suitable plan was developed, all four districts followed the same pattern. By knowing each other and by taking an interest in other counties' problems, the commissioners take more interest in State meetings of commissioners. Cooperation with other agricultural leaders is stressed, and occasionally AAA chairmen and FHA supervisors are invited to attend meetings as guests of the commissioners.

The group welcomes talks by outside speakers. A talk on "Engineering As It Pertains to Soil Conservation" helped to clear up many of the commissioners' questions. Talks on "Grasses, Legumes, and Conservation Practices" and "Soil Classification and Its Relation to Farm Planning in the Work Group" by SCS men gave the commissioners information they could use in planning and administering the district program.

Since these men are vitally interested in agriculture in other parts of the world, they listened to a talk on Alaskan agriculture by one of the farm planners who had spent some time with the Fairbanks Experiment Station. A district farmer who had toured Europe was prevailed upon to tell his impressions of agriculture overseas.

A commissioner from one of the districts, who is also a GI instructor, described how he teaches soil conservation in his classes. A farm planner in the work group who has delved into the subject of nutrition and its relation to soil conservation gave the group his findings on that important subject. Since a well-rounded program is desired, the commissioners invited a Diocesan Coordinator of Rural Life from an Iowa college to tell them more about young people and rural life.

One of the most enjoyable meetings was a picnic in 1947 at a scenic spot on the Maplecrest River Ranch in the Keokuk District which wives and children attended. After a talk by the State conservationist and a short business meeting, the group toured the ranch to see the saddle horses and purebred cattle. Another picnic was held this year at Wellman, Iowa.

A highlight of the four district commissioners' activities was a four-district plowing contest and field day in September 1947. The event attracted 5,000 people to observe a contour-plowing contest and to learn more about terracing and waterway work. Funds for the field day were solicited by the commissioners from equipment dealers in the districts. As a gesture of appreciation of the donations, the commissioners sent the contributors a year's subscription to SOIL CONSERVATION Magazine.

An important part of every four-district program is the business meeting. The district conservationist usually has some information to pass out to the group. Reports may be given by commissioners who have attended State meetings or other events. A discussion of future field days, annual reports, and other district interests come before the group.

Commissioners in these districts have been invited by other districts to explain the organization of a four-district group and how it operates. Reports indicate that similar meetings are being held in some other states. It is true that the soil may not actually be saved at these meetings, but the persons concerned leave with more of an understanding of soil conservation and a renewed determination to do more to help save the Nation's soil and water resources.—H. HOWARD OAK and ETHEL P. WILLER.

**ALL HANDS TOOK PART.**—Directors of the Mason County Soil Conservation District with headquarters in Scottville, Mich., promoted a soil conservation week last June.

The effect soil conservation plays on our social, economical, and ethical life was stressed. Newspapers made a big play with articles, pictures, editorials, and special sections descriptive of soil conservation practices common in the district.

There was a 15-minute daily radio program throughout the week. Thirty-eight ministers in the county gave emphasis to soil conservation in sermons. Many rural and urban organizations used soil conservation as a theme at meetings held during this special week.

District directors were active in making talks, writing newspaper articles, and making radio appearances.

Floyd Wood, chairman of the district, named Tom Alway, member of the board, as chairman of a special action committee composed of Milo Colburn, Ervon Kistler, Ranold Thurow, other directors of the district.

Assisting directors in promotion and planning were Lindo J. Bartelli, work unit conservationist; Paul C. Smith, district conservationist; Harold J. Larsen, county agricultural agent; and Loyal Bagley, AAA chairman. A similar week will be held in 1949.

## NORTHERN GREAT PLAINS



**HIGH PAY FOR BETTER FARMING.**—Some 2,400 bushels of grain are the wages that Ralph Swope, a farmer near Redfield, S. Dak., has realized from a mile and a quarter of drainage ditch. Swope is a cooperator with the Tulare-Redfield Soil Conservation District. It has eliminated one of his worst nuisances, having to farm around potholes. Now he can farm right through them without a hitch.

The drainage ditch is part of the conservation plan that A. B. Gilbertson, SCS, helped work out and apply. It has reclaimed about 70 acres that normally would be too wet to farm in spring or where crops would be drowned out during the growing season. These potholes have been a bother for a long time.

"The year before we built the ditch," Swope says, "we had a dandy crop of oats that was nearly headed out. But along came a 3-inch rain to fill the potholes with a foot or more of water. The water couldn't soak into the heavy soil, and the oats died."

That fall, Swope built the drainage ditch and the next spring planted the field to corn. Another heavy rain fell, but the drainage ditch got rid of the excess water.

"I figure that I have taken 600 bushels of wheat or other grain from those low areas each year since the drainage ditch was built 4 years ago," Swope says.

Other measures for water control include the diversion of runoff water that flooded the farmyard from a neighboring field. A dike and ditch took care of that.

Along with the drainage and diversion structures, SCS technicians located the site for a stockwater dam so that it could help improve grazing management of Swope's pasture, helped him start a farmstead windbreak, and helped him establish an improved crop rotation.

**GOOD FROM THE TOP DOWN.**—Crop yields almost as good at the top of the slope as at the bottom, washouts stopped, and economy in equipment operation are among

the results of conservation farming during the last 8 years by Roy Norman, Osmond, Nebr.

Norman began conservation farming on his own hook in 1938, making use of information gained from newspapers and magazines. He developed grassed waterways, laid out his fields for contour farming, and began the use of grass and legumes in crop rotation.

"These things have held both soil and moisture on the slopes," Norman says. "This has virtually ended crop washouts, and yields at the top of the slopes are nearly as large as those at the bottom. Also, the power needs are less and there is less wear and tear on equipment."

Norman now is cooperating with the Pierce County Soil Conservation District, organized last spring. He and SCS technicians have worked out a more nearly complete farm conservation plan, which includes some changes in fields so that each part of the farm will be put to its best use.

He remarks that although he had made a good start on conservation farming, he realizes that there is more to it than establishing practices, and that is why he sought the aid of district technicians.

**ADJUSTED WATER TABLE.**—Improvement of his irrigation system and drainage, as part of his farm conservation plan, not only has made irrigation easier but also has brought more acres into production, reports Marion E. Tippetts, Lovell, Wyo., cooperating with the Shoshone Soil Conservation District.

"Part of the new land brought into production consisted of barren spots, and part was brush-covered land that has been cleared and leveled," he says.

Tippetts started cooperation with the district 2 years ago. Miles B. Harston of the Soil Conservation Service helped him work out his conservation plan and supplied technical services.

Before he started, some of the land was salty because of a high water table, some was too high for satisfactory irrigation, and some spots were unproductive because of the condition of the soil.

Drains were installed on about 60 acres, the whole irrigated area was leveled and smoothed and gypsum was applied on 26 acres at the rate of 10 tons per acre. Most of the leveling was done with his regular farm equipment, heavy machinery being required to only a small extent. Clearing was done on about 12 acres.

"The drains lowered the water table so that the wet land produced fairly well the first year and will get better," Tippetts said. "Some of the barren spots have been made productive, and crop production was doubled on the land treated with gypsum. Leveling has resulted in better distribution of water, with less work and less water needed."

Tippetts isn't quite through with his conservation plan, however. He will improve existing drains and build new ones that are still needed. And there is still a little land suited for cropping that needs to be cleared and leveled. He is practicing an improved crop rotation and using fertilizer and conservation methods.

**WATER WHERE NEEDED.**—Redant brothers for years pumped water from the Teton River to irrigate their farm about 10 miles west of Fort Benton, Mont. Then along came the Soil Conservation Service to help them bring 65 more acres under irrigation by finding a new location for their pump and designing a new water distribution system.

This happened in the spring of 1947, after they began cooperating with the Chouteau Soil Conservation District.

Redesign of the irrigation system in order to get better control over irrigation water and more uniform irrigation on all of the land is a major part of the job. Leveling of land has been just about completed and a system of border dikes is being installed.

The new system, the Redants report, has reduced the number of ditches needed, has just about eliminated the

need for shoveling, and has made irrigation easier and faster.

A conservation crop rotation that includes the use of grass and legumes is also part of the conservation plan.

**GULLY REFORMED.**—Transforming a wasteful, gnawing gully into a useful, grass-covered drainageway doesn't take so long if you go about it right. That is what J. F. Scraper, Beloit, Kans., found out when he started putting on his land the farm conservation plan developed with the help of Robert T. Schafer of the Soil Conservation Service.

"The gully that is now a grassed drainageway was large," says Scraper. "It had made about 5 acres completely waste and it was growing rapidly. And since it could not be crossed, it interfered with farm operations."

Further, he said, the adjoining land is rather steep sloped and had lost much of its productivity because of erosion.

Scraper, who farms with his son, began cooperating with the Mitchell County Soil Conservation District early last spring in order to get the aid of SCS technicians.

The gully was first bladed-in with heavy equipment and shaped so that it now has a broad floor and gently-sloped sides. In April bromegrass was seeded. Weeds were mowed twice during the summer. In the fall western wheatgrass was seeded where the bromegrass was thin.

"I established this grass cover in less time than I expected," Scraper comments. "And it effectively checked cutting by water that flowed through the drainageway. The appearance certainly is different from what it was a year ago."

Besides the drainageway, Scraper and his son built some of the terraces needed on the farm, put contour strip cropping into effect, built a farm pond, planted a farmstead windbreak, and started using a legume in the crop rotation.

Still needed are more terraces and grassed waterways, seeding of badly eroded and steep land to grass, putting fences on the contour, use of more alfalfa and sweet clover in the crop rotation, and management of crop residues to aid in the control of both wind and water erosion.

Scraper and his son built their terraces with a one-way plow.

**NO LONGER A SLOUGH.**—Because of his conservation plan, he has changed a 20-acre slough near the farmstead into a hay meadow that gets a controlled flood-irrigation each spring, says John A. Hanzal, Parshall, N. Dak., a cooperater with the Ft. Berthold Soil Conservation District.

Hanzal got a wonderful hay crop from the slough his first year on the farm. But melting snow filled it 4 or 5 feet deep the next year. It was kept filled the next 2 years, until drainage was provided.

"Besides preventing the use of some of the best land on the farm," Hanzal explained, "the slough was a nuisance because it was so close to the house. Ducks might have liked it, but so did mosquitoes."

Hanzal worked out his farm conservation plan with the help of H. Glenn Simms of the Soil Conservation Service. Technicians laid out a system of drainage with a small gate in the ditch so that water could be held back long enough to give the ground a good soaking and then drained off. Hanzal built the drainage ditch with district equipment.

"In 1946," he said, "I got a good hay crop from the slough once more. Then last year I got a dandy crop of flax. I intend for the slough to be a permanent hay meadow, however. It was plowed and cropped in preparation for seeding a better hay mixture than was there before."

Besides taking care of the slough, Hanzal's conservation plan includes strip cropping and crop residue management—that is, keeping the land covered with stubble the maximum length of the time. This, he says, has just about

completely stopped the soil blowing that often has damaged crops. Improved pasture management practices are also in effect.

The farmstead windbreak, planted before the slough filled, has done well except where it passed through the slough area. The trees were drowned out there, but now that the slough has been drained more trees will be planted.

## WESTERN GULF



Piles of juniper (cedar) and brush cabled from Rocking R Ranch in fall of 1947. With them is W. H. Bennett, SCS technician.

**TRIAL BY FIRE.**—G. W. Reese is conducting a series of trial brush-burnings and grass-seeding on his Rocking R Ranch near Morgan, Tex. Results will help him in the development of a good pasture management program for his ranch. In working out his plan he has the assistance of Soil Conservation Service technicians called in by the supervisors of the Bosque Soil Conservation District, of which Reese is a cooperater.

Reese had brush and cedar cabled from his ranch last fall. As he does not believe in indiscriminate burning, he left the uprooted trees and bushes on the ground in partly windrowed piles. He then laid out three 2-acre blocks on ordinary upland and shallow rocky pasture sites. One block on each site was burned last March 1 and one of the 2 acres in each block was seeded the next day with a mixture of little bluestem, yellow bluestem, slender grama, sidecoats grama, weeping lovegrass, switchgrass, Manchurian milkvetch, and Hubam sweetclover. The unseeded acre in each block was left as a check plot. The same procedure was carried out on the second block a month later and on the third block 2 months later. It was planned to do no burning or seeding after hot, dry weather set in.

Reese hopes to ascertain: (1) Is it desirable to burn the larger piles of cabled material so that grass can grow and livestock can have access to it; (2) if burning of the large piles is desirable, when is the best time to burn them to prevent excessive losses of organic matter on the surface of the soil; (3) when will the least amount of good grasses already present be killed by the fires; (4) is it desirable to follow up by seeding a suitable mixture of desirable grasses and legumes; and (5) how well will the desirable grasses and legumes prevent or check the undesirable plants from coming in on the disturbed areas?

Cedar, grass, and other forage counts are being made to determine the effect of the cabling, burning, and seeding. The results will be made known to other ranchmen, having like problems. Tours of the Reese ranch also will be made.—W. H. BENNETT





Close-up of old baler.

**OLD HAY BALER TELLS STORY.**—Drought and the over-use of grass are a hard combination on our western range. Just how fast good range can turn into barren waste was graphically brought to my attention when I stumbled on an antiquated hay baler standing like a ghost in a great expanse of naked land 40 miles northeast of Fabens, Tex., across the Hueco Mountains divide on Diablo Mesa.

The old baler, a model of the early 1920's, still contained two bales of hay. A protective hood and the dry climate of the locality had kept the hay in excellent condition. The bales were made up of blue and black grama, vine mesquite, squirreltail and sagewort, all palatable and nutritious. An extended search revealed a remnant here and there of those grasses, enough to prove that once they did exist here. But now the expansive range was mostly barren, exposed to water and wind erosion. There was a sprinkling of invading plants, mostly brush and burro grass.

Investigating the history of the old baler to satisfy our curiosity, I learned that slightly more than 7 years earlier it had put up 440 bales of hay cut right where it stands today. A careful combing of square miles of that area now wouldn't produce enough of that good grass to make half a bale. Abuse of the range and drought had killed out those palatable and nourishing grasses in 7 years.

A laboratory analysis of the 7-year-old hay in the baler showed that it had an 8.06 protein, 1.29 nitrogen, 0.79 calcium and 0.122 phosphorus content. That's good composition for fresh grass.

I have not been able to trace use of the antique baler beyond 1925 when it was operated by Dude Hamilton, a cowboy employed by Lee Moor. It now stands abandoned, relic of a once-flourishing range, on leased land that is part of Moor's 500-section ranch.

We should look upon the old baler as a warning to us all to do something about saving our grassland before it is too late. Fortunately, Moor is doing something about his land. Under a coordinated soil conservation program which he is applying as a cooperator of the El Paso-Hudspeth Soil Conservation District, he is restoring the original grasses. In time, this vast area will again be covered with soil-protecting, cattle-fattening grasses.—J. H. JOHNSON, District Conservationist, Soil Conservation Service, El Paso, Tex.

**YOUNG MAN WITH VISION.**—When Lupe Flores came home from World War II in 1945, he decided that something should be done to make his father's 92-acre farm near Fabens, Tex., more productive. He could see no reason why only 50 acres of the farm would produce a crop—and that crop only half the neighborhood average. To be

sure, much of the farm was composed of rough areas once covered with brush and salt cedar, but young Flores was convinced the whole farm could be made into a productive and profitable enterprise.

Flores talked things over with a supervisor of the El Paso-Hudspeth Soil Conservation District. Result was that he entered into an agreement with the district to apply a coordinated soil conservation program to the farm. As a district cooperator, he received help from SCS technicians in planning and applying a program to fit the specific needs of his father's land.

The plan that Flores developed with the technicians centered around reconstruction of the farm's irrigation system. This involved clearing and leveling the rough areas, filling old river channels, digging new irrigation ditches and installing ditch checks and turnouts. After preparation of the land for irrigation, Flores was to turn under a large tonnage of green manure and to leach areas with a high salt content.

The plan also called for rotation of cash crops with soil-improving legumes and the use of fertilizers as soil analyses showed they were needed.

It was a big undertaking for the youthful Flores but his father gave him full authority and told him to go ahead. His dad gulped, though, when Lupe borrowed \$5,000 to carry out the conservation plan. But results have justified Lupe's confidence.

Last year 80 acres were in production, 45 in cotton and 35 in alfalfa. Some of the fields that had been wasteland produced a bale per acre on the first picking. The 45 acres produced 77 bales. The new alfalfa fields produced 4.3 tons per acre. Flores made enough from the 80 acres last year to pay off the \$5,000 loan and still have more left over than the farm netted in 1945. His timetable called for bringing 10 of the remaining 12 idle acres into cultivation this summer, leaving only 2 acres needing improvement to bring the whole farm into production.—JAMES H. BARKSDALE, Agricultural Engineer, Soil Conservation Service, Fabens, Tex.



Lupe Flores records weight of cotton just brought in by picker. A Battle of the Bulge wound that restricts use of arm has not handicapped young Flores in applying soil conservation program.